ENERGY POLICY ACT OF 1992
SECTION 505
Second Report to Congress

Report on Voluntary Commitments for the Replacement Fuel Supply and Demand Program

Clean Cities Program

October 1, 1999

U.S. Department of Energy
Office of Transportation Technologies
Office of Energy Efficiency and Renewable Energy

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LIST OF EXHIBITS

LIST OF ABBREVIATIONS

AF	Alternative Fuels
AFV	Alternative Fuel Vehicle
AMFA	Alternative Motor Fuels Act of 1988
CAAA	Clean Air Act Amendments of 1990
CMAQ	Congestion Mitigation Air Quality
CNG	Compressed Natural Gas
DMV	Department of Motor Vehicles
DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation
E85	Blend of 85% ethanol and 15% gasoline
EERE	Office of Energy Efficiency and Renewable Energy
EIA	Energy Information Administration
EPA	U.S. Environmental Protection Agency
EPACT	Energy Policy Act of 1992
EV	Electric Vehicle
EVAA	Electric Vehicle Association of the Americas
FHWA	Federal Highway Administration
FFV	Flexible-Fuel Vehicle
GRI	Gas Research Institute
GSA	General Services Administration
IACC	Interagency Alternative Fuels Coordinating Committee
ICTC	Interstate Clean Transportation Corridor
ISTEA	Intermodal Surface Transportation Efficiency Act of 1991
LEV	Low Emission Vehicle
LNG	Liquefied Natural Gas
LPG	Liquefied Petroleum Gas (Propane)
M85	Blend of 85% methanol and 15% gasoline
MOU	Memorandum of Understanding
NGV	Natural Gas Vehicle
NOPI	Notice of Program Interest
NYSERDA	New York State Energy Research & Development Authority
OEM	Original Equipment Manufacturer
OTT	Office of Transportation Technologies
PEPCO	Potomac Electric Power Company
RSO	Regional Support Office
SIP	State Implementation Plan
TLEV	Transitional Low Emission Vehicle
USPS	U.S. Postal Service
ULEV	Ultra Low Emission Vehicle
SULEV	Super Ultra Low Emission Vehicle

EXECUTIVE SUMMARY

Impetus and Overview

This report to Congress presents the status, as of October 1, 1999, of the U.S. Department of Energy's (DOE) **Clean Cities Program**, a voluntary program introduced in 1993 in accordance with section 505 of the Energy Policy Act of 1992 (42 U.S.C. 13201 et. seq.) (EPACT). As required by EPACT, "The Secretary is required to periodically report to the Congress on the results of efforts to obtain voluntary commitments in geographically diverse regions of the U.S. to: (a) make replacement fuels available to the public; (b) have fleet owners of ten or more motor vehicles to acquire and use alternative fuel vehicles; and (c) have the manufacturers of alternative fuel vehicles make sure that the vehicles and related services are available to the public." The activities and accomplishments of the Clean Cities Program, since its introduction in September 1993, are summarized in this report.

The DOE Clean Cities Program establishes a systematic process of working with cities to develop "grass roots" plans for creating local alternative fuel markets. The program shepherds cities through the process of setting goals, building coalitions, and making the necessary commitments to earn a Clean Cities designation. Through these commitments, key stakeholders pledge to pursue the following national goals:

- replace conventional transportation fuels with domestically produced, cleaner-burning, alternative fuels;
- increase the acquisition and utilization of alternative fuel vehicles (AFVs);
- develop alternative fuel infrastructure and vehicle conversion, maintenance, and related service industries; and
- advance public understanding of the benefits and costs of using AFVs.

The key elements of success for this program are partnerships—public/private partnerships that engage the necessary market forces to accomplish the infusion of new AFV technologies. DOE provides limited assistance to offset the incremental cost of AFVs and provides market development assistance. DOE technical and management resources are targeted at building local coalitions, coordinating technology product suppliers, and improving market and customer information. Clean Cities works directly with local governments and local businesses and shares innovations "mayor-to-mayor" along the Clean Cities network.

The Clean Cities Program is developing the alternative fuels industry and is a working model for the next generation of government initiatives. DOE's vision for the future is clearly defined in its Performance Agreement with the President of the United States: "By the turn of the century, the Department of Energy, through its leadership in science and technology, will continue to advance U.S. economic, energy, environmental, and national security." The Clean Cities Program contributes to the accomplishment of these key goals with the following actions:

(1) leveraging DOE's unique science and technology capabilities to advance the nation's future;
(2) restoring, stabilizing, protecting, and enhancing the environment;
(3) developing and deploying clean energy sources and enhancing energy security; and
(4) stimulating U.S. economic productivity.

Clean Cities Accomplishments

Now, six years after the program's inception, Clean Cities has made great strides in diversifying transportation fuel consumption. Through voluntary partnerships formed around the country, Clean Cities has heightened public awareness of the benefits of alternative fuel usage, increased the number of AFVs on the road, and developed alternative fuel infrastructure throughout North America. Progress through October 1, 1999 includes the following accomplishments:

- Seventy-five Clean Cities, representing 3,700 stakeholders, participate in the Clean Cities Program, reaching from Maine to Hawaii and including cities in Mexico and Canada.
- Participating cities now have 160,000 AFVs (40 percent of all AFVs in the U.S.), and have pledged to have 186,000 AFVs by the end of 2001.
- Participating cities now have 4,800 alternative fuel refueling facilities within their regions and have pledged to increase this number to 5,100 by the end of 2001.
- With assistance from Clean Cities, 12 EV-Ready regions have been established.
- The Clean Cities AFVs have already displaced approximately 8 million barrels of petroleum fuel, and will displace an additional 10 million barrels by the end of 2001.
- The Clean Cities AFVs have already resulted in 639,000 tonnes of carbon reductions, and will reduce carbon emissions by an additional 860,000 tonnes by the end of 2001.
- The Clean Cities AFVs have already resulted in 77,000 tonnes of criteria emissions reductions, and will reduce criteria emissions by an additional 97,000 tonnes by the end of 2001.

DOE has further enhanced the efforts of the Clean Cities Coalitions through the State Energy Program Alternative Fuels Special Projects which awarded grants to new and innovative uses of AFVs. Since the inception of these grants, over $13 million in DOE funding has been awarded to recipients in 38 states through 168 separate grants. In addition to the DOE funding, participants in these grant projects have indicated that they would provide $79 million in matching funding for the projects. The grant program has resulted in 510 alternative fuel vehicles being placed into service, and 1,100 more planned to be placed in service. DOE grants are also providing alternative fuel refueling infrastructure. A total of 28 stations have been put in service with over 100 more in the process of being installed. In addition, the grants have provided the needed funds for a total of 114 other projects that are described in the following subcategories: funding of coordinators; Clean Cities activities; alternative fuels promotional materials or activities; alternative fuels training & educational materials or activities; miscellaneous infrastructure improvements (e.g. universal card readers); workshops; planning & reporting activities; and alternative transportation projects (i.e. electric bikes or telecommuting initiatives).

DOE believes that the success of voluntary initiatives like the Clean Cities Program is a critical complement to mandates and regulations (such as EPACT), and indicates the desire and commitment of the government and private industry to work together to find alternative fuels solutions. EPACT provides the progressive guidance needed to change our dependance on imported oil in the transportation sector. Ultimately, to make real changes in our transportation system and our dependence on imported fuel, continued and increasing resources must be allocated to the EPACT programs, voluntary and mandated, including the Clean Cities Program. In addition, DOE must be given additional authorities within EPACT since it is now clear that the EPACT goals will not be met without them.

Organization of the Report

This report provides a comprehensive analysis of the Clean Cities Program— past, present, and future. Section I presents a detailed description of the program, including discussion of the EPACT legislation that initiated this and other energy security programs, and the methods, goals, and objectives for the future. Section II presents the tangible results achieved by the program from its inception. Section III provides the organizational structure of the program including the responsibilities of DOE and the coalitions participating in the program. Section IV details the program's assistance to Clean Cities coalitions—the program's customers. Section V explains how Clean Cities is integrated with other DOE initiatives to promote EPACT goals. Section VI outlines the strengths and weaknesses of the program, highlighting the benefits and limitations of voluntary initiatives. Section VII offers a look into the future of the Clean Cities Program, detailing legislative objectives and planned future activities.

I. PROGRAM DESCRIPTION

What is Clean Cities and how does it work?

Alternative Fuels: the Spark for the Clean Cities Engine

The Clean Cities Program is a locally-based government/industry partnership program coordinated by the U.S. Department of Energy (DOE) to expand the use of fuels that are alternatives to gasoline and diesel fuel by accelerating the deployment of alternative fuel vehicles (AFVs), and building a local AFV refueling infrastructure. The Clean Cities organization is built on the premise that we can change our communities for the better through cooperation and voluntary partnerships, working to reduce our reliance on imported oil and improving air quality. No population relies more on the automobile and imported fuels to get from point to point than people in the United States. The transportation sector has an enormous impact on our economy, our national energy security, and our environment. Transportation is the one sector which has not diversified its energy resources and remains highly vulnerable to petroleum price spikes and shortages. Moreover, emissions from vehicles are the single largest contributor to air pollution in many cities, making our air unhealthy to breathe and increasing our health care costs. Fleets in urban areas are best suited to overcome the hurdles of using alternative fuels. As more vehicles use alternative fuels, these hurdles will be diminished and others may start using alternative fuels as well. Using alternative fuels have the benefits of not only displacing petroleum fuels, but could result in better air quality, increased domestic economic activity, and reduced contribution to global climate change.

By combining local decision-making with the voluntary action of Clean Cities partners, the Clean Cities' "grass roots" approach departs from traditional "top-down" Federal programs.

One of Eight Raley's Natural Gas Trucks in the Sacramento Clean Cities Region

It creates an effective plan, carried out at the local level, to establish a sustainable, nationwide alternative fuels market. Clean Cities builds on local initiative, provides options for solving local problems, and creates partnerships as the mechanism to develop those solutions. The program works directly with local businesses and governments to shepherd them through goal-setting, coalition-building, and commitment processes to establish the foundations for a viable alternative fuels market. Clean Cities dynamically promotes State and Federal objectives by sharing local innovations

"mayor-to-mayor" along the Clean Cities network and providing continuous feedback to the 3,700 industry and government stakeholders.

A Market-Based Solution that Works

The Clean Cities program thrives on strong local initiatives and a flexible approach to the challenge of building alternative fuels markets, providing participants with options to address problems unique to their cities, and fostering partnerships as the mechanism to overcome these problems. Clean Cities works directly with local businesses and governments, guiding them through each step in the process of building the foundation for a vibrant local organization, including goal-setting, coalition-building, and securing commitments. Current and potential members of the Clean Cities network also help each other by sharing local innovations "mayor-to-mayor," by addressing and relaying obstacles they encounter in pursuing alternative fuels programs, and by exchanging "do's" and "don'ts," based on experiences in these programs. Clean Cities can continually pioneer innovations and aspire to make strides nationally as well as locally.

Clean Cities is dedicated to:

- Creating new jobs and commercial opportunities
- Facilitating alternative fuel vehicle production
- Expanding local refueling infrastructure
- Developing "Clean Corridors"
- Increasing public awareness
- Advancing clean air objectives
- Supporting regulated fleets
- Identifying niche markets for AFVs

Diversification

In accordance with DOE's policy of fuel neutrality, Clean Cities advocates the promotion and development of all alternative fuels. The goal of the program is to help diversify our nation's transportation fuels; no particular alternative fuel is singled out for development. The Clean Cities Program encourages each coalition to focus on the alternative fuel or fuels best suited for its region's environment and economy.

> "The spirit and enthusiasm that infuses the Clean Cities network...is leading us to the transportation market of tomorrow." Secretary Richardson at the designation of the Capitol Clean Cities of Connecticut as the 72nd member of Clean Cities

Voluntary Accomplishment

Right now, in 75 areas around the country, Clean Cities partners are putting AFVs on the road. The Clean Cities partners began in 1994 with 30,000 AFVs which since then has grown to 160,000. The 3,700 stakeholders around the country, including local governments, fleet managers, utilities, public entities, and private industries, work together to promote the use of alternative fuels and AFVs. Their efforts include public information campaigns, vehicle conversions and purchases, development of refueling infrastructure, and "Clean Corridors" (major transportation routes among Clean Cities). The country's leading automakers and fuel providers have approached Clean Cities

programs with initiatives to provide them with AFVs and alternative fuel infrastructure. This highly effective program—Clean Cities—has resulted in voluntary commitments from these stakeholders. Since September 1993, the DOE Clean Cities Program has unified common visions for alternative fuels development in these local markets, which include small communities, large metropolitan areas, and entire states—and the program is still gaining momentum. Moreover, Clean Cities coalitions have been successful in winning approximately 180 million dollars of funding under the Department of Transportation's ISTEA/CMAQ program for innovative alternative fuel projects. They have also been leaders in influencing local and state initiatives to further support development of the AFV marketplace.

Why Clean Cities?

Legislative Impetus

Through the Energy Policy Act of 1992 (EPACT), the U.S. Congress directs DOE to promote ways of increasing use of alternatives to gasoline and diesel fuels. Section 505 (42 U.S.C. 13255) of EPACT requires DOE to seek sufficient voluntary commitments from fuel and vehicle suppliers, and fleet owners and operators to form the critical partnerships necessary for the successful commercialization of AFVs and the development of alternative fuel infrastructure (see Exhibit 1-1). The Clean Cities Program is DOE's action plan for implementing section 505.

Exhibit I-1. Energy Policy Act of 1992 Section 505 (42 U.S.C. 13255)

The Secretary shall, by January 1, 1994, and thereafter, undertake to obtain voluntary commitments in geographically diverse regions of the United States -

1. from fuel suppliers to make available to the public replacement fuels, including providing for the construction or availability of related fuel delivery systems;

2. from owners of 10 or more motor vehicles to acquire and use alternative fueled vehicles and alternative fuels, and

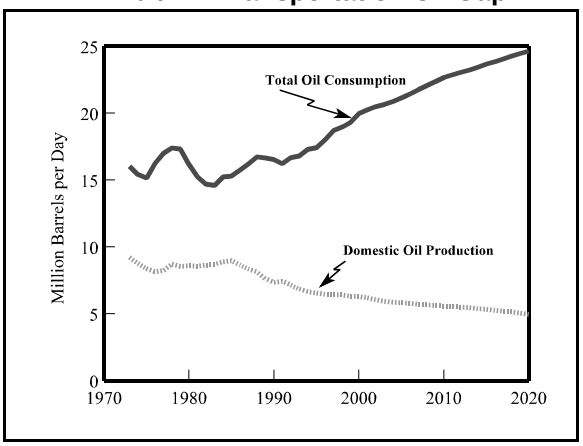
3. from suppliers of alternative fueled vehicles to make available to the public alternative fueled vehicles and to ensure the availability of necessary related services,

in sufficient volume to achieve the goals described in section 502(b)(2) or as modified under section 504, and in order to meet any fleet requirement program established by rule under this title. The Secretary shall periodically report to the Congress on the results of efforts under this section. All voluntary commitments obtained pursuant to this section shall be available to the public, except to the extent provided in applicable provisions of law protecting the confidentiality of trade secrets and business and financial information, including section 1905 of title 18, United States Code.

U.S. Transportation Dependence on Oil

DOE is working to reduce the country's dependence on oil in the transportation sector and to mitigate the air pollution problems it causes. America's growing dependence on oil imports is a potential threat to national security, the economy, and the environment. Oil imports are projected to increase from 49 percent of domestic consumption in 1997 to over 65 percent in 2020. With petroleum demand projected to grow at an average rate of 1.2 percent per year and domestic production to decline by about 1.1 percent per year, the Energy Information Administration (EIA) predicts that imported petroleum will account for 58 to 72 percent of domestic petroleum consumption by 2020. The United States spends over $62 billion each year on oil imports, representing a major transfer of wealth from the United States to oil exporting countries. Ninety-seven percent of our total

Exhibit I-2. Transportation Oil Gap



transportation energy comes from oil, and we use 13 million more barrels of oil each day than is domestically produced (see Exhibit I-2). Vehicle fuel efficiencies have shown large improvements since the 1970s but for the past decade have been fairly constant; increases in vehicle population and per capita miles driven have eroded these gains, contributing to a net increase in consumption of petroleum for transportation. Moreover, emissions from vehicles are the single largest contributor to air pollution in many cities, creating an unhealthy climate and increasing our health care costs. According to the American Lung Association, approximately $50 billion is spent each year on health care as a direct result of air pollution.

Potential Benefits

The potential benefits of the Clean Cities Program reach far beyond displacing oil as a transportation fuel. Promoting domestic production and use of alternative fuels and AFVs strengthens our nation's economy, reduces our national security burden, and provides a healthier environment. Diverting consumption away from oil and toward domestically produced alternative fuels and AFVs can potentially improve our trade deficit, create tens of thousands of jobs in developing industries, and reduce the contribution of transportation fuels to global climate change.

A viable solution to a complex problem

Coalition Building

The technologies to produce alternative fuels and AFVs exist and are relatively simple to adopt. The challenge is bringing the various players together and coordinating their mutual interests into a definitive plan of action. In order to decrease oil consumption, the U.S. must place AFVs on the road, but consumers cannot buy vehicles that are not available. The automakers are reluctant to produce goods without quantifying a definite and substantial market demand, and consumers cannot demand products that are not known to exist. Consumers cannot use AFVs if the alternative fuels are unavailable, but fuel providers, like the automakers, are reluctant to make the investment to build an alternative fuel infrastructure before there is sufficient demand. The Clean Cities Program provides a solution to these problems by building partnerships which bring key players together in order to create critical private sector interest and incentives to leverage private sector market activity. In effect, the partnerships reduce market uncertainty, enabling each party to market confident capital investment. These efforts have gained tremendous support from local markets nationwide. The Clean Cities Program is designed to enable market forces to infuse alternative fuels technology products into the marketplace. Its mission is to create effective plans, carried out at the local level, for creating a sustainable, nationwide alternative fuels market. DOE provides limited

assistance to offset the incremental cost of AFV technologies and provides market development assistance through the State Energy Program. DOE technical assistance and management resources are targeted at building local coalitions, coordinating technology product suppliers, and information dissemination.

Market Development

AFV producers and alternative fuel suppliers must synchronize their efforts to successfully influence consumer demands and U.S. transportation patterns. Through this process, the locally-based Clean Cities coalitions develop plans that will create an alternative fuels market through commitments to:

- displace conventional transportation fuels with domestically produced, clean-burning alternative fuels;
- increase acquisition and utilization of AFVs;
- develop the alternative fuel supply infrastructure and vehicle conversion, maintenance, and related service industries;
- advance public understanding of the benefits of using AFVs; and
- raise awareness of the process for implementing an AFV policy.

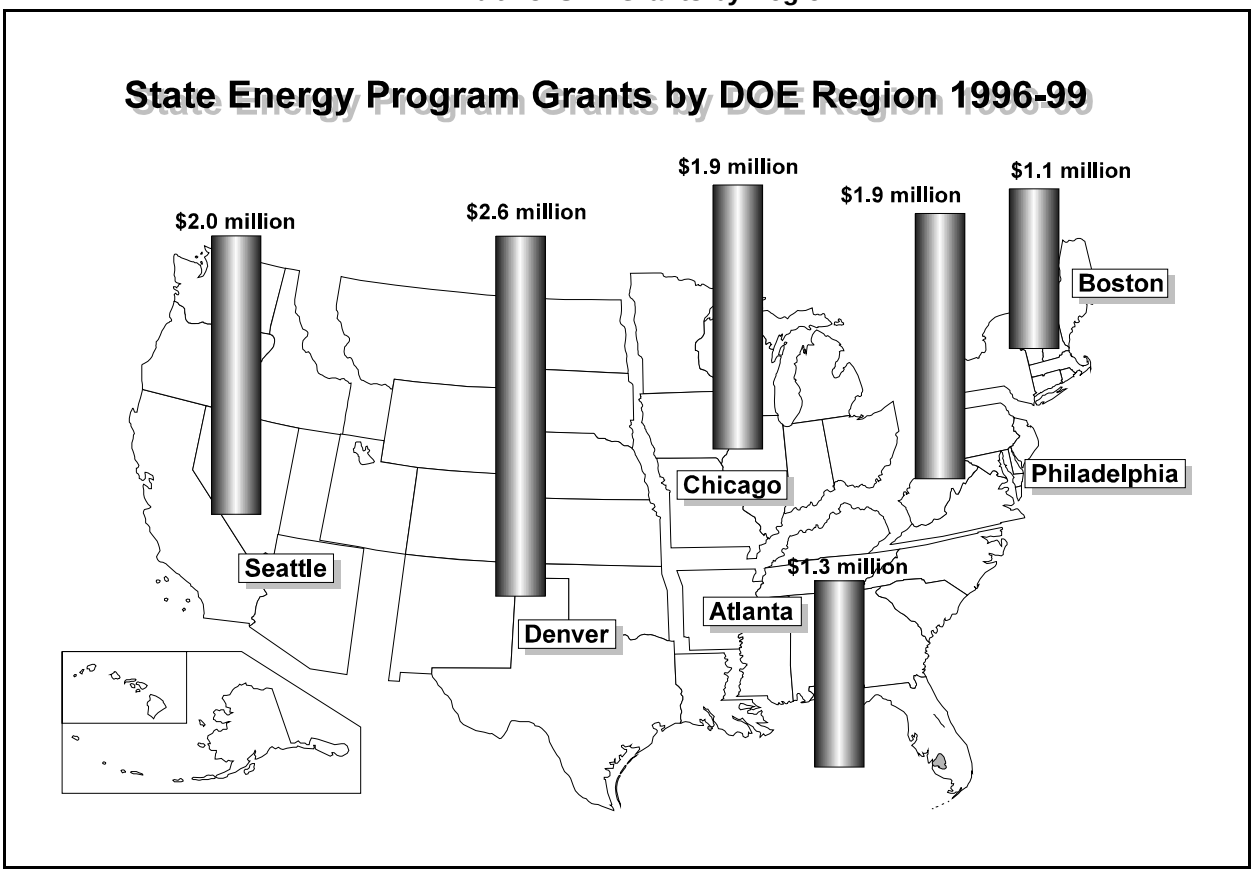
DOE has further enhanced the efforts of the Clean Cities Coalitions through the State Energy Program Alternative Fuels Special Projects which awarded grants to new and innovative uses of AFVs. Since the inception of these grants, $10.8 million in DOE funding has been awarded to recipients in 38 states through 168 separate grants (see Exhibit I-3). In addition to the DOE funding, participants in these grant projects have indicated that they would provide $79 million in matching funding for the projects. The grant program has resulted in 510 alternative fuel vehicles being placed into service, and 1,100 more planned to be placed in service. DOE grants are also providing alternative fuel refueling infrastructure. A total of 28 stations have been put in service with over 100 more in the process of being installed. In addition, the grants have provided the needed funds for a total of 114 other projects that are described in the following subcategories: funding of coordinators; Clean Cities activities; alternative fuels promotional materials or activities; alternative fuels training & educational materials or activities; miscellaneous infrastructure improvements (e.g. universal card readers); workshops; planning & reporting activities; and alternative transportation projects (i.e. electric bikes or telecommuting initiatives).

Where does Clean Cities take us?

A Vision for the Future

The Clean Cities Program is developing the alternative fuels industry and is a working model for the next generation of government initiatives. DOE's vision for the future is clearly defined in its Performance Agreement with the President of the United States: “By the turn of the century, the Department of Energy, through its leadership in science and technology, will continue to advance U.S. economic, energy, environmental, and national security.” The Clean Cities Program contributes to the accomplishment of these key goals with the following actions:

Exhibit I-3. SEP Grants by Region



(1) leveraging DOE's unique science and technology capabilities to advance the nation's future;

(2) restoring, stabilizing, protecting, and enhancing the environment;

(3) developing and deploying clean energy sources and enhancing energy security; and

(4) stimulating U.S. economic productivity.

Proactive Deployment of Alternative Fuel Vehicles

By seeking voluntary commitments, the Clean Cities Program fulfills several objectives. Placing vehicles on the road through these voluntary actions can help ease the transition to implement annual AFV acquisition requirements that apply to EPACT covered fleets. Although additional rules may also have to be issued pertaining to other types of entities, voluntary Clean Cities activity helps to mitigate the number of new rules or guidelines. Heightened public awareness of AFV deployment, infrastructure development, vehicle availability, rules and regulations, and alternative fuels will facilitate an easier transition to the adoption of AFVs. Clean Cities partners and stakeholders gain a considerable advantage by committing to the goals of the program prior to the effective dates of EPACT legislation. Those who purchase AFVs before the mandates are put in place may qualify for AFV credits. Taking

early steps to convert and purchase vehicles and build alternative fuels infrastructure will ease compliance with specific requirements. Furthermore, through voluntary commitments initiated by Clean Cities, future public rules may be rendered unnecessary or less stringent.

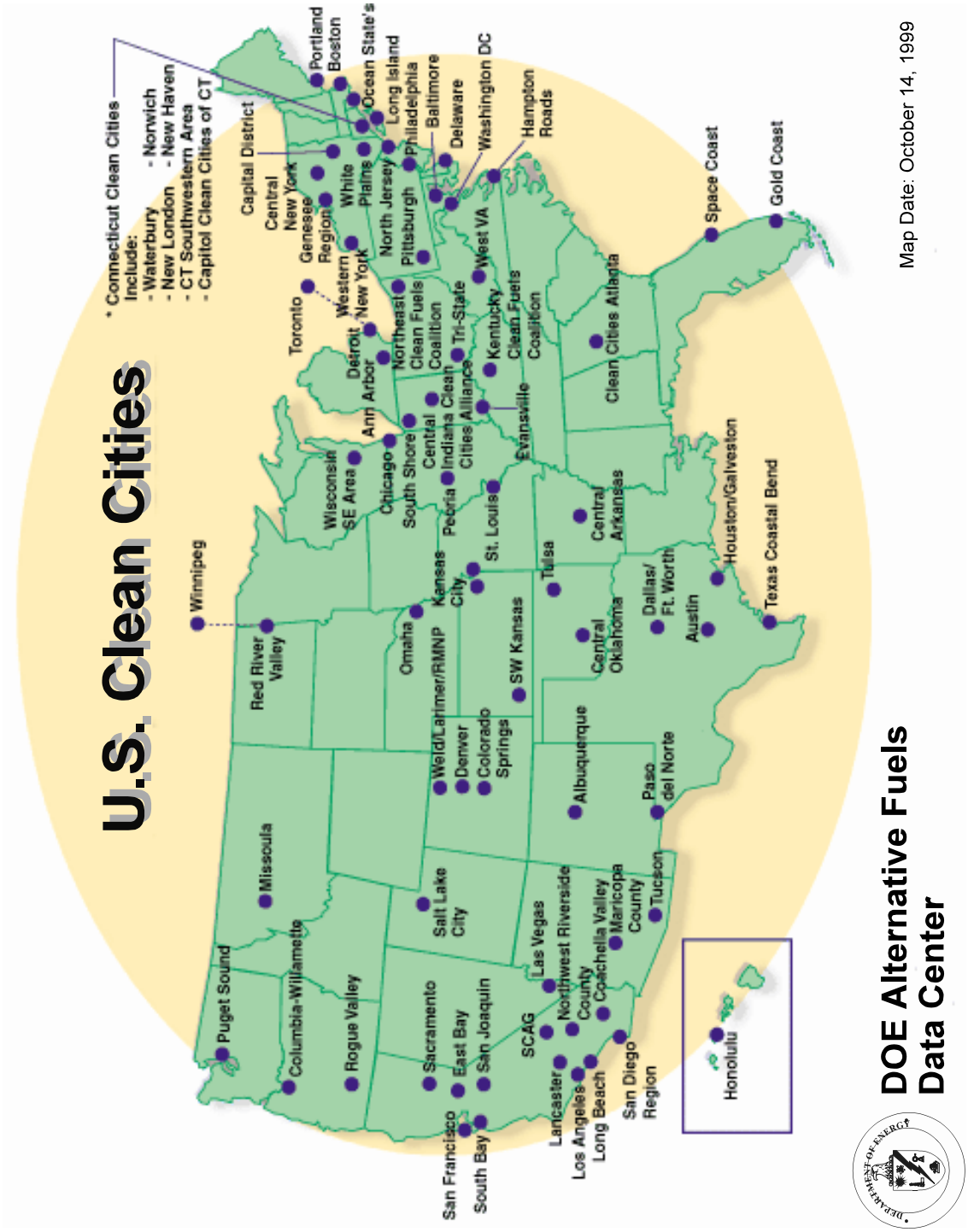
A New Model for Government

Clean Cities also exemplifies government/private partnership and government-to-government activity at their best and can serve as a model for a more effective, "reinvented" version of government. By providing guidance, while shifting the responsibility to the private sector, the Clean Cities Program is demonstrating the new paradigm of government action and public/private partnership. Clean Cities is also an example of how the Federal Government can coordinate its own programs. For example, DOE promotes public and private sector use of AFVs through such programs as the Public Information Program (section 405; (42 U.S.C. 1323 1)), the Certification of Training Program (section 411; (42 U.S.C. 12237)), and the Replacement Fuels Program (section 502; (42 U.S.C. 13252)).

DOE supports the missions of other Federal programs and agencies. Clean Cities works to increase coordination among Federal agencies through the Interagency Committee on Alternative Fuels and Low Emission Vehicles (INTERFUEL). Several other Federal agencies, including the U.S. Postal Service and the General Services Administration, make substantial contributions to the Clean Cities coalitions on a local level. The Federal Government is working aggressively to acquire alternative fuel vehicles for its own vehicle fleets, as intended by EPACT and the Alternative Motor Fuels Act of 1988 (AMFA). EPACT section 303 requires the introduction of light-duty AFVs into Federal fleets in specific incremental percentages over the next several years. President Clinton, in April 1993, issued Executive Order 12844, which increases the acquisition requirements by 50 percent for 1993-95 over the levels required by section 303 (Executive Order 13031 later superseded Executive Order 12844). President Bush had earlier issued Executive Order 12759 (April 1991) requiring Federal agencies to annually purchase the maximum practicable number of alternative fuel vehicles. Executive Order 13123 (64 FR 30851, June 8, 1999) revoked Executive Order 12759. On December 13, 1996, President Clinton issued Executive Order 13031 which allowed use of medium- and heavy-duty AFVs to be counted as part of EPACT in the Federal Fleet. These efforts to date have resulted in the acquisition of 44,000 AFVs by late 1998. DOE's Clean Cities Program promotes voluntary commitments and coordinated action by the key groups within participating city regions for installation of alternative fuel infrastructure and acquisition of vehicles.

The key to the Clean Cities Program is the partnership developed with local industries, organizations, and Federal agencies. Local constituents avoid the usual inefficiencies associated with top-down government programming, yet they retain the benefits of Federal coordination, resources, and guidance.

Exhibit II-1. Map of Current Clean Cities



II. RESULTS

What has the program accomplished?

Membership Has Grown Rapidly

In 1993 Secretary of Energy Hazel R. O'Leary introduced the Clean Cities initiative to the Mayors of each of the 125 metropolitan areas covered by the Energy Policy Act of 1992 (EPACT). The Secretary wrote to encourage all of the Mayors to support the use of alternative fuels and alternative fuel vehicles (AFVs). The first program was launched in Atlanta, Georgia on September 8, 1993. Local businesses, Federal, State, and local agencies gathered to sign a Memorandum of Understanding (MOU) signifying their commitments to the goals and objectives of the Clean Cities Program, whereupon DOE declared the City of Atlanta to be the first of the Clean Cities.

Hazel O'Leary at the Los Angeles Clean Cities Designation

Atlanta was an ideal initial target for this voluntary public/private partnership program, and the area had already taken steps toward building coalitions to promote clean air through the use of alternative fuels. The Clean Cities Program provided an organizational structure with which these varied entities could harness their collaborative efforts and effectively alter their transportation infrastructure. These efforts would result in efficient and low emission AFVs being showcased to the world during the 1996 Summer Olympics. Six years and a total of 75 Clean Cities later, the experiment has matured into a successful program for introducing alternative fuels technology into local communities around the country. Exhibit II-1 presents a map of all the Clean Cities and Exhibit II-2 lists each of the Clean Cities and the dates they were established. All geographical areas of the country are represented by Clean Cities and membership is also international with the inclusion of Ciudad Juarez, Mexico as part of the Paso del Norte Clean Cities, as well as Winnipeg and Toronto in Canada.

As of the end of FY 1999, the Clean Cities Program boasts a membership of 3,700 stakeholders including all the major auto manufacturers, most of the major utilities in the U.S., dozens of vendors of alternative fuel equipment, alternative fuel suppliers, and hundreds of Federal, state, and local government agencies. The focus of the Clean Cities Program within DOE has shifted from growth of new Clean Cities to assisting existing Clean Cities coalitions to capitalize on their potential. Clean Cities stakeholders are committed to diversifying the energy resources for transportation, making vehicles

Exhibit II-2. List of Clean Cities and Designation Dates

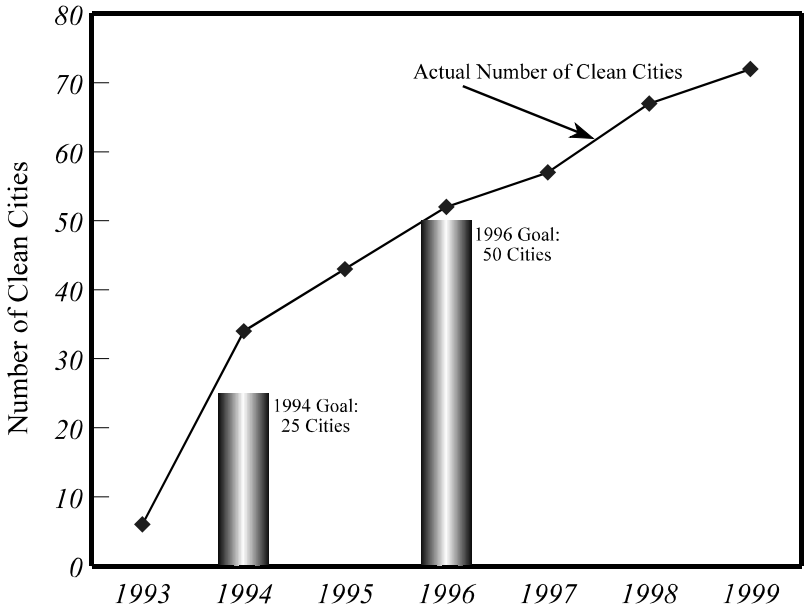
1. Atlanta, Georgia (9/8/93)
2. Denver, Colorado (9/13/93)
3. Philadelphia, Pennsylvania (9/22/93)
4. Clean State, Delaware (10/12/93)
5. Las Vegas, Nevada (10/18/93)
6. Washington, DC (10/21/93)
7. Boston, Massachusetts (3/18/94)
8. Austin, Texas (4/18/94)
9. Florida Gold Coast, Florida (5/3/94)
10. Chicago, Illinois (5/13/94)
11. Albuquerque, New Mexico (6/1/94)
12. Southeast Area, Wisconsin (6/30/94)
13. Colorado Springs, Colorado (7/13/94)
14. Long Beach, California (8/31/94)
15. Lancaster, California (9/22/94)
16. Salt Lake City, Utah (10/3/94)
17. White Plains, New York (10/4/94)
18. Baltimore, Maryland (10/7/94)
19. Clean State, West Virginia (10/18/94)
20. Louisville, Kentucky (10/18/94)
21. Rogue Valley, Oregon (10/21/94)
22. San Francisco, California (10/21/94)
23. Sacramento, California (10/21/94)
24. South Bay (San Jose), California (10/21/94)
25. East Bay (Oakland), California (10/21/94)
26. San Joaquin Valley, California (10/21/94)
27. Western Area, New York (11/4/94)
28. Portland, Oregon (11/10/94)
29. St. Louis, Missouri (11/18/94)
30. Waterbury, Connecticut (11/21/94)
31. Southwestern Area, Connecticut (11/21/94)
32. Norwich, Connecticut (11/21/94)
33. New London, Connecticut (11/21/94)
34. Peoria, Illinois (11/22/94)
35. Southwest Area, Kansas (3/30/95)
36. Central Area, New York (6/15/95)
37. Dallas/Fort Worth, Texas (7/25/95)
38. Honolulu, Hawaii (8/29/95)
39. Missoula, Montana (9/21/95)
40. New Haven, Connecticut (10/5/95)
41. Central Area, Arkansas (10/25/95)
42. Paso del Norte, Texas (11/17/95)
43. Pittsburgh, Pennsylvania (12/5/95)
44. SCAG, California (3/1/96)
45. Los Angeles, California (3/22/96)
46. Coachella Valley, California (4/22/96)
47. Weld/Larimer/RMNP, Colorado (5/21/96)
48. Central Area, Oklahoma (5/29/96)
49. Hampton Roads, Virginia (10/4/96)
50. San Diego, California (12/12/96)
51. Long Island, New York (10/18/96)
52. Detroit/Toronto Corridor, Michigan (12/18/96)
53. Tri-State Area, Ohio (1/29/97)
54. Evansville, Indiana (1/30/97)
55. Greater Houston, Texas (9/4/97)
56. Portland, Maine (9/4/97)
57. Tulsa, Oklahoma (9/22/97)
58. Maricopa Ass'n of Gov'ts, Arizona (10/8/97)
59. Riverside, California (10/24/97)
60. Northern Area, New Jersey (10/30/97)
61. Corpus Christi, Texas (3/30/98)
62. Genesee Region, New York (5/28/98)
63. Red River Valley, North Dakota (8/10/98)
64. Puget Sound, Washington (8/13/98)
65. Providence, Rhode Island (9/14/98)
66. Omaha, Nebraska (9/18/98)
67. Kansas City, Missouri (11/18/98)
68. Central Area, Indiana (3/4/99)
69. Ann Arbor, Michigan (4/19/99)
70. Capital District (Albany), New York (4/26/99)
71. South Shores, Indiana (6/15/99)
72. Capitol Clean Cities, Connecticut (6/21/99)
73. Tucson, Arizona (8/24/99)
74. Northeast Ohio Clean Fuels Coalition (9/14/99)
75. Florida Space Coast (10/1/99)

more efficient, and reducing the environmental impact on their use through reduction of criteria pollutants and climate change gases.

Exhibit II-3 illustrates the growth in the number of Clean Cities over time. DOE was given two goals for the number of Clean Cities: 25 by the end of 1994; and 50 by the end of 1996. Both of these goals were achieved. A measure of the success of the Clean Cities concept is that since 1996, DOE has stopped soliciting for new Clean Cities, yet the growth in new Clean Cities has continued almost unabated.

Selected Achievements

Exhibit II-3. Growth in Number of Clean Cities



The Clean Cities coalitions are successfully performing the tasks outlined in their original MOUs and Program Plans. Their activities include stakeholder recruitment, vehicle purchases, infrastructure development, and public information campaigns. Their work has resulted in thousands of AFVs being put into place and hundreds of new refueling facilities. The following are some selected achievements Clean Cities coalitions have made. (For detailed discussion of many other activities sponsored by Clean Cities coalitions, please refer to the Appendix, Clean Cities Profiles.)

- The Texas Department of Transportation operates more than 5,000 AFVs, including 400 bi-fuel propane pickup trucks.
- In the Denver area, SuperShuttle operates a fleet of 18 AFVs, including 10 new CNG Ford vans purchased in early 1999. These vans are expected to accumulate over 70,000 miles per year.
- The U.S. Postal Service has the largest AFV fleet in the nation, with more than 8,000 vehicles (primarily CNG, but also a small number of EVs). They have recently purchased an additional 10,000 ethanol FFVs, which will be deployed across the country in 1999 and 2000.
- The Los Angeles Metropolitan Transit Authority operates a total of 560 CNG transit buses, and plans to add more than 2,000 alternative fuel buses, mostly CNG, to the fleet by 2004.
- In June 1998, the City of Long Beach sold its one-millionth gasoline gallon equivalent of natural gas. The City sells about 30,000 gasoline gallon equivalents per month from its five refueling sites.
- Yellow Cab of Connecticut currently has 31 CNG Honda Civic GX sedans in its taxi fleet, representing 30% of Yellow Cab's entire fleet.
- Shenendehowa Central School District

Denver Natural Gas SuperShuttle Being Refueled

Exhibit II-4. Number of Alternative Fuel Vehicles in Clean Cities

Year	Methanol	Ethanol	Propane	CNG	LNG	Electric	Other	Total
1994	2,095	105	2,251	8,836	12	675	1,135	15,109
1995	3,095	575	7,525	17,283	12	1,055	2,791	32,336
1996	3,387	1,759	58,127	44,019	33	1,621	3,826	112,772
1997	2,377	2,557	61,218	51,474	198	1,941	2,343	122,108
1998	2,506	4,542	64,285	61,729	384	2,452	2,378	138,276
1999	2,381	9,386	66,676	70,427	518	3,049	4,395	156,832
2000	2,339	11,757	69,073	78,186	584	3,773	4,817	170,529
2001	2,370	12,734	69,702	88,274	607	4,212	7,710	185,609

(near Albany, NY) currently operates a fleet of 28 CNG school buses. This represents the highest proportion of AFVs of any school bus fleet in New York State.

- Checker Cab of Atlanta currently has 70 CNG vehicles in its fleet. They are also testing a prototype CNG Ford Expedition in taxi service.
- Pierce Transit of Tacoma, Washington, currently operates a fleet of 117 CNG transit buses (out of a total of 173 buses). They plan to power their entire fleet with alternative fuels by 2003.

Vehicle Deployment

The Clean Cities Program has been successful at helping to put AFVs into use in communities across the country. Exhibit II-4 shows past, current, and projected numbers of AFVs in Clean Cities. Rapid growth in the early years of the program has resulted in about 40 percent of all the AFVs in the U.S. being part of Clean Cities coalitions (as of 1999). As a result of this success in developing demand for AFVs, the major auto manufacturers have asked for Clean Cities' assistance in marketing their lines of AFVs, recognizing the nationwide "popularity" of the Clean Cities Program and the concentration of potential customers represented by the network of coalitions. DOE has responded and worked hand-in-hand to provide opportunities for the private sector to implement AFVs and their associated infrastructure. "With the Clean Cities network, we don't have to sell the concept of alternative fuels, we only have to sell the vehicles, which is what we do best," said Tom Artushin of Ford Motor Company.

These Clean Cities AFVs generate significant benefits in terms of petroleum fuel displacement and emission reductions:

- The Clean Cities AFVs have already displaced approximately 8 million barrels of petroleum fuel, and will displace an additional 10 million barrels by the end of 2001.
- The Clean Cities AFVs have already resulted in 639,000 tonnes of carbon reductions, and will reduce carbon

Exhibit II-5. Number of Alternative Fuel Refueling Stations in Clean Cities

Year	Methanol	Ethanol	Propane	CNG	LNG	Electric	Other	Total
1994	15	8	269	263	0	18	27	600
1995	29	9	559	487	1	113	66	1,264
1996	30	14	1,222	768	4	448	109	2,595
1997	29	15	1,471	1,051	6	688	45	3,305
1998	31	30	1,637	1,243	10	1,103	45	4,099
1999	33	56	1,865	1,507	12	1,279	62	4,814
2000	33	63	1,909	1,587	12	1,325	64	4,993
2001	33	70	1,929	1,622	12	1,350	64	5,080

emissions by an additional 860,000 tonnes by the end of 2001.

- The Clean Cities AFVs have already resulted in 77,000 tonnes of criteria emissions reductions, and will reduce criteria emissions by an additional 97,000 tonnes by the end of 2001.

Infrastructure Development

Clean Cities coalitions have helped provide refueling and recharging infrastructure for AFVs. One of the largest hurdles for AFVs to overcome is the lack of convenient refueling facilities. By coordinating AFV placement with refueling facility placement, Clean Cities coalitions provide an essential element to the growth of AFVs. Exhibit II-5 shows past, current, and projected numbers of AFV refueling stations in Clean Cities.

Clean Cities unites public and private sector entities whose common goal is to build the alternative fuels market. Such cooperation has allowed localities to choose the alternative fuels that best serve their communities based on fuel availability, fuel performance, emissions reductions, and economic factors. The partnerships fostered through Clean Cities also have led to the expansion of the refueling infrastructure. Fuel suppliers are continually committing to provide facilities, fuel and service, which is crucial to further growth of the AFV market.

General Motors EV1 Electric Vehicle

Clean Cities has assisted the electric vehicle (EV) industry in developing EV-Ready communities. EV-Ready communities are asked to undertake several specific activities including adoption of incentives (monetary and non-monetary) to encourage EV use and infrastructure deployment; development of a

plan to deploy charging equipment; assessment and modification of building, electrical, and safety codes for expedited deployment of charging equipment; and execution of a public information/awareness campaign. Clean Cities, in partnership with the Electric Vehicle Association of the Americas (EVAA), and the Department of Transportation (DOT), hosted ten EV-Ready workshops around the country in Sacramento, Los Angeles, Phoenix, Atlanta, Washington, DC, New York, Richmond, Boston, Detroit, and Ft. Lauderdale. EV-Ready Regions that have resulted from these workshops include (as of mid-1999):

- Arizona - Phoenix;
- Arizona - Tucson Area;
- California - Northern;
- California - Southern;
- Georgia - Atlanta;
- Florida - Broward County;
- Michigan - Detroit;
- Massachusetts - Boston;
- Metropolitan Washington D.C.;
- New York City Metropolitan Area;
- Virginia - Northern; and
- Virginia - Southern.

Niche Market Fleets

Alternative fuels are typically best suited to fleets which consume large amounts of fuel and operate in a small, well-defined geographic area. Because these fleets are not necessarily typical of most fleets and often serve very specific purposes, they are referred to as "niche market fleets." Examples of niche market fleets include airport shuttle services, school buses, bakery trucks, and package delivery vehicles. Clean Cities has been challenging these niche market fleets to achieve 100% alternative fuel use in their vehicles. This will help build a stronger local market base for alternative fuels, which will encourage other fleets in the area to buy AFVs.

Clean Cities coalitions can play a key role in bringing niche market fleets together with local fuel providers and by facilitating cooperative infrastructure development planning. Having conveniently located refueling facilities is essential for niche market fleets because of their fixed routes or limited area of operation. Large fuel consumption is desirable not only because it makes the economics for the fleet operator more favorable, but because it provides the business opportunity that is needed for fuel providers to make the capital investments in new refueling infrastructure. After the refueling facilities are established for niche market fleets, the convenience and availability of refueling infrastructure will facilitate Clean Cities to entice non-niche market fleets in the area to choose AFVs, and generate greater confidence in fuel providers to invest in additional refueling facilities.

Alternative Fuels Promotion

The DOE is working with several organizations to facilitate acquisition of AFVs, establish refueling infrastructure, develop new AFV technology, and educate students about alternative fuels through student engineering competitions. In all these efforts DOE is leveraging its available funds through shared participation with other organizations.

Rebate Program

In FY1999, DOE awarded $1.2 million to fleets that acquired AFVs to partially offset their incremental costs. As a result, 567 additional AFVs will be put on the road. DOE anticipates continuing the Rebate Program in

FY2000, but at a reduced level using a more streamlined process. In FY 2000, rebates of $2,000 per vehicle will be available through Clean Cities Coalitions to those who purchase dedicated OEM alternative fuel vehicles.

GRI/DOE Grants

In 1995 and 1998, the Gas Research Institute (GRI) provided financial assistance of $400,000 to $500,000 to promote the use of natural gas vehicles and to establish natural gas refueling facilities. The DOE provided matching funds to those of the GRI and has allowed GRI access to the Clean Cities network.

"The magic of this cooperative initiative is how closely the Clean Cities and GRI objectives coincide," said GRI NGV Group Manager, Rajeana Gable. "Deployment of GRI's NGV portfolio of products and technologies is very important to implementing the NGV Industry Strategy, which focuses on high fuel-use fleets and open-access fueling facilities. Through this cooperative effort with DOE's Clean Cities, we can see an immediate impact on the marketplace. These demonstration projects will also give GRI and the gas industry an opportunity to better understand the technical, economic, environmental, and social benefits that influence the use of natural gas vehicles now and in the future," Ms. Gable said.

E85 Refueling Station Assistance

Several hundred thousand ethanol flexible-fuel vehicles (FFVs) will soon be on the roads across the U.S. Many of these will be used to satisfy EPACT requirements, and they should also be popular with Clean Cities stakeholders. However, as of September 1999 there are only 47 ethanol (E85) refueling facilities across the U.S. DOE is assisting fuel providers to increase the number of E85 refueling facilities in locations convenient to large numbers of FFVs in an effort to increase the use of E85.

PERC/DOE Grants

DOE committed $250,000 in FY1999 for propane vehicle demonstration projects that was matched by the Propane Education & Research Council (PERC). The combined funding allowed eight projects to by funded in 1999. Applicants had to provide at least 40 percent matching funds and be a Clean Cities Stakeholder or partner with a local Clean Cities program. The purpose of the demonstration program is to identify and make public the air quality benefits of propane, to reduce transportation petroleum fuel consumption, and to expand the awareness of propane as an alternative fuel.

Student Competitions

While not strictly a part of Clean Cities, DOE sponsors several university competitions which demonstrate that alternative fuel vehicles can perform as well as (or better than) their gasoline counterparts in every way. DOE supported the following advanced vehicle technology competitions:

1996-1997 Propane Vehicle Challenge encouraged students to convert gasoline-fueled 1996 Chrysler minivans to propane-fueled vehicles. Winners developed an ultra low emission vehicle (ULEV) that has a minimum range of 400 km (approximately 250 miles) and performance equal to or better than an equivalent gasoline-fueled vehicle.

1997 EV International Challenge, the first and only event of its kind in the world, gave

Crowder College's Ethanol Challenge Chevy Silverado

students, teachers, EV experts, and the general public an opportunity to display their knowledge or learn about EVs.

In the Ethanol Challenge (1998-2000), 14 college and university student teams from 10 states and Canada convert General Motors cars and trucks to use ethanol as fuel. In 1999, most teams showed that a dedicated E85 Silverado pickup truck could accelerate better, achieve better emissions and fuel economy, and provide better towing capability than the conventional gasoline counterpart.

The primary objectives of the FutureCar Challenge (1996-1999) were to provide opportunities for universities and engineering students to join the national challenge to develop an 80-mpg midsize sedan using hybrid electric technology. At the same time, FutureCar creates a valuable pool of future automotive engineers with hands-on experience in advanced automotive technologies. Two teams were able to demonstrate fuel economy over 60 mpg without sacrificing performance or utility.

FutureTruck 2000, co-sponsored by GM, will show that large sport utility vehicles—with the help of advanced technologies—can be "green" and efficient.

Secretary Richardson with the Engineering Students who Participated in FutureCar 1999

Since its debut in 1990, the Sunrayce program's flagship activity continues to be a biennial intercollegiate competition to design, build and race solar-powered cars in a challenging long-distance event.

New Markets

Alternative fuels and alternative fuel vehicles can benefit both the local and national economy by creating new jobs and commercial opportunities. Activities such as AFV conversions, new technology development, and greater use of domestically produced fuels and feedstock all generate business growth and new profit opportunities. In addition, Clean Cities spurs new demand for AFV products, as program stakeholders pledge to make AFV acquisitions through the year 2005. Clean Cities is working to transform these pledges into firm vehicle purchases or conversion orders, while challenging manufacturers to develop product

lines that meet the various needs of the market.

Coalitions Complement EPACT and EPA Mandates

The 75 current Clean Cities coalitions include more than one-half of the nation's Clean Air Act (42 U. S.C. 7401 et seq.) ozone non-attainment areas with populations of over 250,000. While many of the coalitions include or serve large metropolitan areas, small communities are also involved. Many communities within Clean Cities such as Grand Forks in the Red River Valley Clean Cities, are not subject to EPACT mandates or Environmental Protection Agency (EPA) imposed air quality restrictions. Their participation is truly on a voluntary basis and results from the recognition that promoting alternative fuels and participating in the Clean Cities Program are worthy pursuits.

Nontraditional Participation-National Parks and Airports

The Clean Cities Program is exploring innovative approaches for organizing coalitions and deploying AFVs in nontraditional regions. For example, Rocky Mountain National Park became a "Clean Park" as a member of the Weld/Larimer County, Colorado program. DOE has also supported the development of "Clean Airports." Many urban areas with large airports (many of them already being Clean Cities) have come to the realization that the increase in air travel was affecting the air quality in their region. To date, two Clean Airport conferences have been held to discuss ways that emissions from airport ground vehicles can be reduced, with the primary emphasis on use of alternative fuels. Airport ground vehicles are ideally suited to using alternative fuels because of their limited range of operation. The EPA supports the concept of Clean Airports and has participated and supported the conferences.

Summary of Results

The Clean Cities Program has successfully built coalitions dedicated to putting AFVs on the road and building the supporting infrastructure. The program has created 75 partnerships that include 3,700 stakeholders who collectively operate about 160,000 AFVs, which represents about 40 percent of all AFVs in the U.S. The Clean Cities Program has been instrumental in the placement of several thousand new alternative fuel refueling facilities.